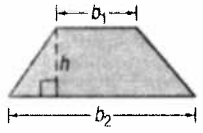
NAME _____ DATE _____ PERIOD _____

11-2 Study Guide and Intervention

Areas of Trapezoids, Rhombi, and Kites

Areas of Trapezoids A trapezoid is a quadrilateral with exactly one pair of parallel sides, called bases. The **height of a trapezoid** is the perpendicular distance between the bases. The area of a trapezoid is the product of one half the height and the sum of the lengths of the bases.

Area of a Trapezoid	If a trapezoid has an area of A square units, bases of b_1 and b_2 units, and a height of h units, then $A = \frac{1}{2}h(b_1 + b_2)$

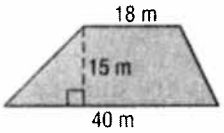


Example **Find the area of the trapezoid.**

$A = \frac{1}{2}h(b_1 + b_2)$ Area of a trapezoid

$= \frac{1}{2}(15)(18 + 40)$ $h = 15$, $b_1 = 18$, and $b_2 = 40$

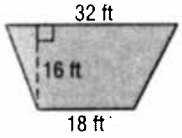
$= 435$ Simplify.

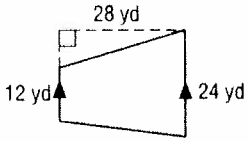


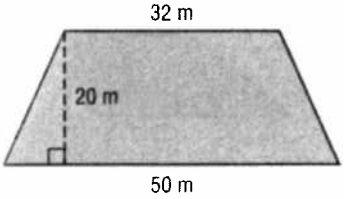
The area of the trapezoid is 435 square meters.

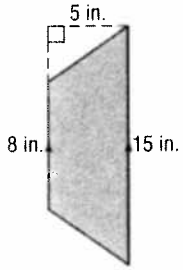
Exercises

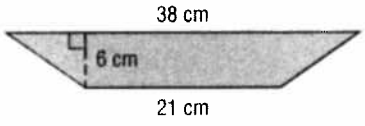
Find the area of each trapezoid.

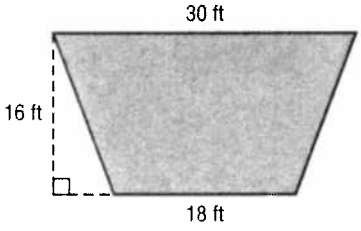
1. 

2. 

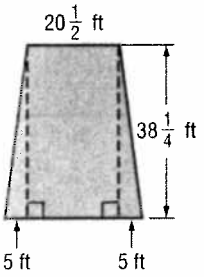
3. 

4. 

5. 

6. 

7. **OPEN ENDED** Ryan runs a landscaping business. A new customer has a trapezodial shaped backyard, shown at the right. How many square feet of grass will Ryan have to mow?



Lesson 11-2

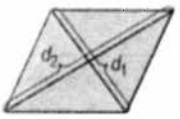
NAME _____ DATE _____ PERIOD _____

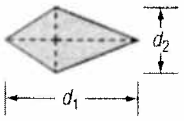
11-2 Study Guide and Intervention *(continued)*

Areas of Trapezoids, Rhombi, and Kites

Areas of Rhombi and Kites A rhombus is a parallelogram with all four sides congruent. A kite is a quadrilateral with exactly two pairs of consecutive sides congruent.

Area of Rhombus or Kite	If a rhombus or kite has an area of A square units, and diagonals of d_1 and d_2 units, then $A = \frac{1}{2} d_1 \cdot d_2$.





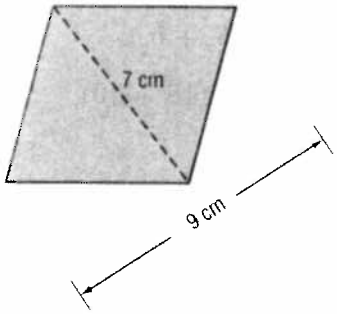
Example **Find the area of the rhombus.**

$A = \frac{1}{2} d_1 d_2$ Area of rhombus

$= \frac{1}{2}(7)(9)$ $d_1 = 7$, and $d_2 = 9$

$= 31.5$ Simplify.

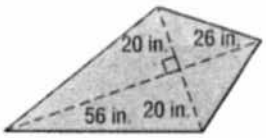
The area is 31.5 square meters.



Exercises

Find the area of each rhombus or kite.

1.



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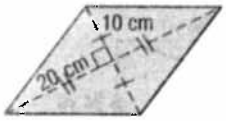

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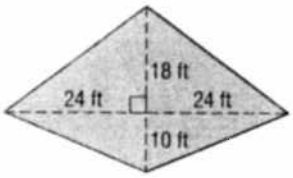

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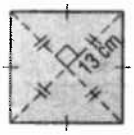

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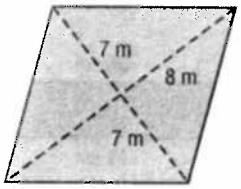

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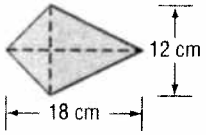
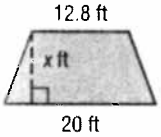
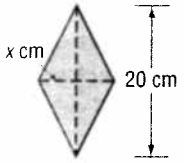


ALGEBRA Find x.

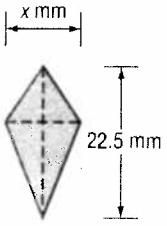
7. $A = 164$ ft^2



8. $A = 340$ cm^2



9. $A = 247.5$ mm^2



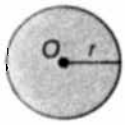
NAME _____ DATE _____ PERIOD _____

11-3 Study Guide and Intervention

Areas of Circles and Sectors

Areas Of Circles The area of a circle is equal to π times the square of radius.

Area of a Circle	If a circle has an area of A square units and a radius of r units, then $A = \pi r^2$.

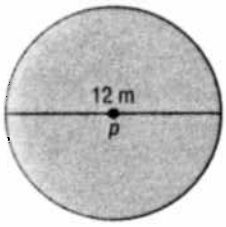


Example **Find the area of the circle p.**

$A = \pi r^2$ Area of a circle

$= \pi(6)^2$ $r = 6$

≈ 113.1 Use a calculator.

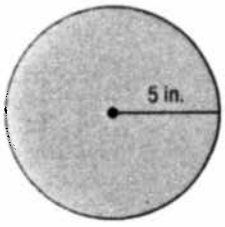


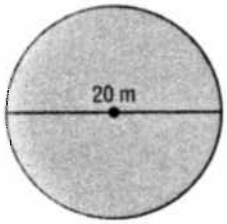
The area of the circle is about 113.1 square meters.

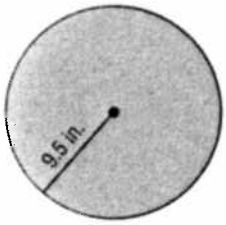
If $d = 12$ m, then $r = 6$ m.

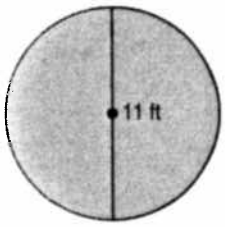
Exercises

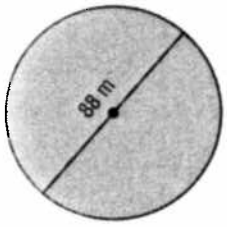
Find the area of each circle. Round to the nearest tenth.

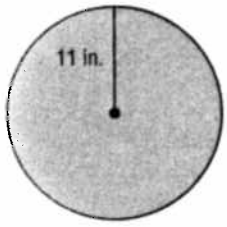
1. 

2. 

3. 

4. 

5. 

6. 

Find the indicated measure. Round to the nearest tenth.

7. The area of a circle is 153.9 square centimeters. Find the diameter.

8. Find the diameter of a circle with an area of 490.9 square millimeters.

9. The area of a circle is 907.9 square inches. Find the radius.

10. Find the radius of a circle with an area of 63.6 square feet.

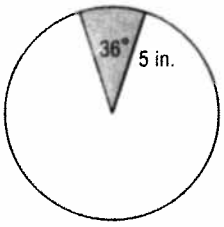
11-3 Study Guide and Intervention *(continued)*

Areas of Circles and Sectors

Areas of Sectors A sector of a circle is a region bounded by a central angle and its intercepted arc.

Area of a Sector	If a sector of a circle has an area of A square units, a central angle measuring $x°$, and a radius of r units, then $A = \frac{x}{360}\pi r^2$.

Example **Find the area of the shaded sector.**



$A = \frac{x}{360} \cdot \pi r^2$ Area of a sector

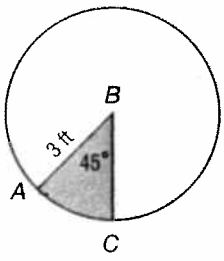
$= \frac{36}{360} \cdot \pi(5)^2$ $x = 36$ and $r = 5$

≈ 7.85 Use a calculator.

The area of the sector is about 7.85 square inches.

Exercises

Find the area of each shaded sector. Round to the nearest tenth.

1.


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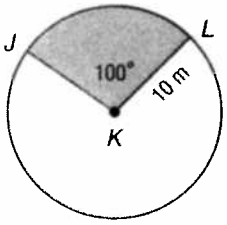

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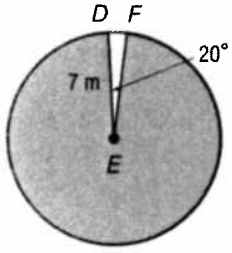

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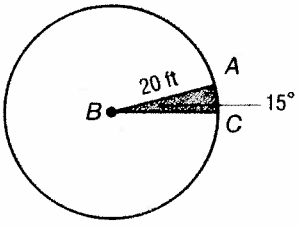

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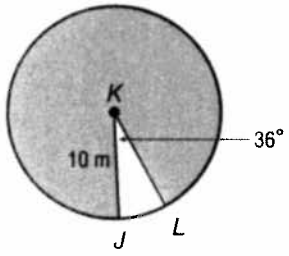

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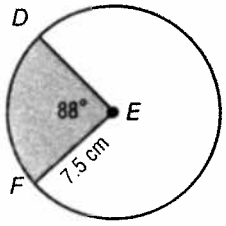

7. **SANDWICHES** For a party, Samantha wants to have finger sandwiches. She cuts sandwiches into circles. If she cuts each circle into three congruent pieces, what is the area of each piece?